TEXTRON Lycoming

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SERVICE INSTRUCTION

DATE: January 12, 2001

Service Instruction No. 1009AQ
(Supersedes Service Instruction No. 1009AP and
Supplement No. 1 to Service Instruction No. 1009AP)
Engineering Aspects are
FAA Approved

SUBJECT: Recommended Time Between Overhaul Periods

MODELS AFFECTED: All Textron Lycoming Piston Aircraft Engines

The following chart shows the established time between overhaul (TBO) for Textron Lycoming piston aircraft engines. TBO's can be established on engines that incorporate GENUINE TEXTRON LYCOMING PARTS only, and are not applicable if the engine contains parts other than those supplied by Textron Lycoming. Service experience, variations in operating conditions, and frequency of operation are some of the factors taken into consideration when a TBO is established. **Because of variations in the manner in which engines are operated and maintained, Textron Lycoming can give no assurance that any individual operator will achieve the recommended TBO.**

Continuous service assumes that the aircraft will not be out of service for any extended period of time. Refer to latest revision of Service Letter No. L180 if the aircraft is to be out of service for a period of time greater than 30 days.

Engine deterioration in the form of corrosion (rust) and the drying out and hardening of composition materials such as gaskets, seals, flexible hoses and fuel pump diaphragms can occur if an engine is out of service for an extended period of time. Due to the loss of a protective oil film after an extended period of inactivity, abnormal wear on soft metal bearing surfaces can occur during engine start. Therefore, all engines that do not accumulate the hourly period of time between overhauls specified in this publication are recommended to be overhauled in the twelfth year.

Engine accessories and propellers may require overhaul prior to engine overhaul and should be accomplished in accordance with the accessory manufacturer's recommendation.

The TBO's in the chart do not apply to engines engaged in crop dusting or other chemical-application flying. These engines should be overhauled at 1500-hour intervals or at recommended TBO, whichever is lower.

Reliability and average service life cannot be predicted when an engine has undergone any modification not approved by Textron Lycoming. The TBO's shown in the table are recommendations for engines as manufactured, without considering any modifications that may alter the life of the engine.

RECOMMENDED TIME BETWEEN OVERHAUL PERIODS

FIXED WING AIRCRAFT		
Engine Models	See Note	Hours
O-235 Series (except –F, -G, -J	12	2400
O-235-F, -G, -J	13	2000
O-290-D	--------	2000
O-290-D2	--------	1500
O-320 Series (except O-320-H); IO-320-A, -E	1,10,11	2000
O-320-H	11	2000
IO-320-B, -D, -F	4,6,10,11	2000
IO-320-C	2,4,10,11	1800
AIO-320 (160 HP)	6	1600
AEIO-320 Series	6	1600
O-340 Series	1	2000
O-360 Series (except O-360-E, -J2A); IO-360-B, -E, -F, -M1A (180 HP)	1,4,10,11	2000
O-360-E	4,11	2000
IO-360-L2A	11	2000
IO-360-A, -C, -D, -J (200 HP)	4,5,6,10,11	2000
TO-360-C,-F; TIO-360-C	3,11	1800
TO-360-E (180 HP)	3,4,11	1800
AIO-360 (200 HP)	6	1400
TIO-360-A Series	3,11	1200
AEIO-360 Series (180 HP)	6	1600
AEIO-360 Series (200 HP)	6	1400
O-435; GO-435	--------	1200
GO, GSO-480; IGSO-480	1	1400
O-540-A, -B, -E4A5; IO-540-C, -D	1,10	2000
O-540-E4B5, -E4C5	1,11	2000
O-540-G, -H, -J; IO-540-N, -T, -V, -W	10,11	2000
O-540-L3C5D	2,11	2000
IO-540-A, -B (290 HP)	1,10,11	1400
IO-540-E, -G, -P	1,10,11	1600
IO-540-S, -AA	2,10	1800
IO-540-J, -R	2,10	1800
IO-540-AB1A5, -AC1A5	11	2000
IO-540-K, -L, -M	10,11	2000
IO-540-K1B5, -K1G5	10,11	2000
AEIO-540 Series	6	1400
IGO & IGSO-540 Series	--------	1200
TIO-540-V, -W, -AE	3,4,11	2000
TIO-540-C, -AA, -AB, -AF, -AG, -AH, -AJ	3,4,7,11	2000
TIO-540-A, -F, -J, -N, -R, -S, -U	3,4,11,14	1800
TIO-541-A (320 HP)	3	1300
TIO-541-E (380 HP)	3,9	1600
TIGO-541 (425 HP)	3	1200
IO-720 Series	11	1800

RECOMMENDED TIME BETWEEN OVERHAUL PERIODS (CONT.)

ROTARY WING AIRCRAFT		
Engine Models	See Note	Hours
O-320-A2C, -B2C	11	2000
HO-360-C1A	11	2000
O-360-C2B,-C2D; HO-360 (except –C1A); HIO-360-B	--------	1500
O-360-J2A	11	2000
HIO-360-A, -C, -D, -E, -F Series	--------	1500
VO-360-A Series	--------	600
VO-360-B; IVO-360	--------	1000
VO-435-A Series	--------	1200
VO-435-B Series	--------	1200
TVO-435 Series	3	1000
O-540-F1B5	11	2000
VO-540 Series	8	1200
IVO-540 Series	--------	600
TVO, TIVO-540 Series	3,8	1200

NOTES

1. Only engines built with ½ inch dia. exhaust valve stems. Engines of this series with 7/16 inch dia. exhaust valves should not exceed 1200 hours between overhauls regardless of the type of operation. New and remanufactured engines built with ½ inch dia. exhaust valve stems are identified, respectively, by serial numbers and date in the latest revision of Service Instruction No. 1136.
2. These engines are designed to incorporate exhaust turbocharging.
3. Turbochargers may require removal, prior to engine overhaul, for carbon removal and repair.
4. Engines with reverse rotation have same overhaul times as corresponding normal rotation engines.
5. 1200 HOURS: Engines that do not have large main bearing dowels should not be operated more than 1200 hours between overhauls.

1400 HOURS: Engines that have large main bearing dowels may be operated to 1400 hours between overhauls. These include engines with serial numbers L-7100-51A and up, and L-101-67A and up; engines which are in compliance with the latest revision of Service Bulletin No. 326; and remanufactured engines shipped after January 26, 1970.

2000 HOURS: Engines that have large main bearing dowels and redesigned camshafts may be operated to 2000 hours between overhauls. These include engines with serial numbers L-9762-51A and up; IO-360-C1E6 engines with serial numbers L-9723-51A and up; LIO-360-C1E6 engines with serial numbers L-524-67A and up; engines that are in compliance with the latest revision of Service Bulletin No. 326 and Service Instruction No. 1263. Remanufactured engines shipped after October 1, 1972 may be operated to 2000 hours between overhauls except those with serial numbers L-2349-51A and L-7852-51A which do not have the redesigned camshaft and must not exceed 1400 hours of operating time between overhauls.

6. The reliability and service life of engines can be detrimentally affected if they are repeatedly operated at alternating high and low power applications which cause extreme changes in cylinder temperatures. Flight maneuvers which cause engine overspeed also contribute to abnormal wear characteristics that tend to shorten engine life. These factors must be considered to establish TBO of aerobatic engines; therefore it is the responsibility of the operator to determine the percentage of time the engine is used for aerobatics and establish his own TBO. The maximum recommended is the time specified in this instruction.

7. TIO-540-C Series engines with serial numbers L-1754-61 and up, TIO-540-C Series engines that were remanufactured or overhauled at Textron Lycoming, Williamsport, PA after March 1, 1971 and TIO-540-C series engines that have been modified to incorporate large main bearing dowels as described in the latest revision of Service Instruction No. 1225 may be operated to 2000 hours. Engines that do not incorporate this modification must not exceed 1500 hours between overhauls.

8. VO, TVO and TIVO-540 engines built with P/N 77450 connecting rods as described in the latest revision of Service Bulletin No. 371 may be continued in service to 1200 hours. Engines that do not incorporate this new connecting rod are restricted to 1000 hours for VO-540 models and 900 hours for TVO and TIVO-540. See latest revision of Service Bulletin No. 371 for improved connecting rod assembly.

9. TIO-541-E series engines with serial numbers L-804-59 and up, remanufactured engines shipped after March 1, 1976 and all engines that incorporate the improved crankcases and cylinder assemblies described in the latest revision to Service Bulletin Nos. 334 and 353 may be operated for 1600 hours before overhaul. Engines not in compliance with these requirements are limited to 1200 hours recommended time between overhaul.

10. Some engines in the field have been altered to incorporate an inverted oil system in order to perform aerobatic maneuvers. Whenever this modification is done to an engine, the TBO of the engine must be determined in the same manner listed for AEIO engines of the same model series.

11. If an engine is being used in "frequent" type service and accumulates 40 hours or more per month, and has been so operated consistently since being placed in service, add 200 hours to TBO time.

12. To qualify for the 2400 hour TBO, high-compression O-235's must have the increased strength pistons (P/N LW-18729). See latest revision of Service Letter No. L213.

13. The high-compression O-235-F, -G and –J series do not have the increased-strength pistons (P/N LW-18729); therefore, they do not qualify for the 2400 hour TBO.

14. TIO-540-A series engines with serial numbers L-1880-61 and up, TIO-540-A series engines that were remanufactured or overhauled at Textron Lycoming, Williamsport, PA after March 1, 1971 and TIO-540-A series engines that have been modified to incorporate large main bearing dowels as described in the latest revision of Service Instruction No. 1225 may be operated to 1800 hours. Engines that do not incorporate this modification must not exceed 1500 hours between overhauls.